

Request For Deviation / Waiver

Dev # DAS-D14Date 26 September 2001Deviation ☒ Waiver ☐

Originator

Name: ITT Industries, Inc	Address: ITT Industries, Inc. 1761 Business Center Drive Reston, VA 20190
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Title Of Deviation / Waiver: TDRS-to-TDRS Transitions

Contract Number: GS-35-01095, Task 11 Cage Code: **9M715**Classification: Minor ☒ Major ☐ Critical ☐

Part Number: 036-600083 Title: Demand Access System Controller (DASCON) software design

Effectivity: Resource Allocation Software module Recurring Deviation/ Waiver: Yes ☐ No ☒

Effect on Cost: None, if approved Effect on Schedule: None, if approved

Effect on Logistics Support, Interface or Software: Logistics support and interfaces: none.
Software: none if approved.

Reference Documents: SRD Paragraphs: 3.1.2.4.1.d, 3.1.2.4.2.f, 3.2.2.3.1.a and 3.2.2.3.1.b

Description of Deviation / Waiver:

*"3.1.2.4.1.d, ... DAS shall propagate the **last** state vector in the existing TDRS ephemeris if a **new** state vector is not available." [Emphasis added]*

*"3.1.2.4.2.f, ... DAS shall propagate the **last** state vector in the existing DAS Customer ephemeris if a **new** state vector is not available." [Emphasis added]*

1. DAS will fully comply with these requirements except when:
 - a. The difference in position between the last state vector in the existing TDRS ephemeris and the new TDRS state vector is less than 50 km.
 - b. The difference in position between the last state vector in the existing DAS Customer ephemeris and the new Customer state vector is less than 920 km.

In these cases, DAS will continue to use the last state vector for current day scheduling purposes and the new state vector for future day scheduling and for current day beamforming and Doppler correction calculations.

When the differences between the last state vector and the new state vectors are greater than 50 Km for TDRS or 920 Km for the Customer, respectively, DAS will use the new TDRS state vector or new Customer state vector for current day schedule re-planning as well as for future day scheduling, and for current day beamforming and Doppler correction calculations.

"3.2.2.3.1.a, ... DAS shall execute TDRS to TDRS transitions when the angle from zenith of the upcoming TDRS is equal to or smaller than the angle from zenith of the current TDRS as viewed from the DAS customer satellite ... "

"3.2.2.3.1.b, ... DAS shall execute TDRS to TDRS transitions with no more than 15 seconds of service outage."

2. DAS plans and executes TDRS to TDRS transitions in compliance with these requirements. In cases where service is not replanned and rescheduled per item 1:
 - a. DAS executes the TDRS to TDRS transition as planned using the last state vector which, by definition, must occur before or after the point that the angle from zenith of the upcoming TDRS is equal to or smaller than the angle from zenith of the current TDRS as viewed from the DAS customer satellite based on the new state vector.
 - b. DAS uses the new state vector to calculate beamforming and Doppler corrections; therefore, it is possible that service outages could exceed 15 seconds as the TDRS to TDRS transitions are executed based on the last state vector.

Deviation submitted to document design choices approved 05/23/01.

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Goal is to minimize schedule jitter and replanning in the current day schedule arising from minor positional variations between successive state vectors.

Corrective action taken:

None. NASA, to minimize the impact of schedule changes on unmanned user MOCs, approved this deviation for these four requirements at the May 2001 special design review. See DAS Action Item 139, established 5/23/01.

Submitting Activity

Name:

Walter E. Kearns

Title:

ITT – AES, DAS PM

Signature:/s/ *Walter E. Kearns***Date:**

10/01/01

Customer Approval / Disapproval

Approval**Disapproval****Date:** 10/15/01**Name:**

Thomas A. Gitlin

Title:

PRODUCT MANAGER

Signature:

Original signed